

REMARKS

The Official Action of September 9, 2004 has been carefully considered and reconsideration of the application as amended is respectfully requested.

The claims have been amended to remove the bases for the rejections appearing at paragraphs 3-5 of the Official Action. In particular, Claims 1 and 2 have been amended to recite that the claimed elastomer comprises a rubber phase and a plastic matrix whereby the claims no longer omit an element considered by the Examiner to be essential. Moreover, there is sufficient antecedent basis in the claims as amended for all claim limitations.

Claim 9 has also been amended by the incorporation therein of a weight ratio formerly in Claim 10. In addition, the claims have been amended to remove "preferable" ranges, which have been recited in new Claims 19-22. Other formal changes have been made to the claims to place them into better form without changing the scope thereof. All claims as amended are respectfully believed to be sufficiently definite to satisfy the dictates of 35 USC 112, second paragraph.

Claims 9, 11, 14 and 15 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over Claims 36 and 16-18 of copending Application No. 10/049,333. This rejection has been overcome by the amendment to Claim 9 which incorporates from Claim 10 the weight ratio of fully vulcanized powdery rubber to plastic is 30:70 to 75:25. Indeed, Applicants respectfully note that this rejection has **not** been applied against the subject matter of Claim 10.

The subject claims of copending Application No. 10/049,333 relate to a method for processing or toughening a plastic using a fully vulcanized powdery silicone rubber. In contrast, the amended Claim 9 of the present application relates to a process for preparing a fully vulcanized thermoplastic elastomer, wherein the weight ratio of fully vulcanized powdery rubber to plastic is 30:70 to 75:25.

It is well known in the art that a toughened plastic differs from thermoplastic elastomer in, *inter alia*, the content of rubber in the composition. Specifically, when a plastic is mixed with a rubber to toughen the plastic, a relatively high content of rubber will impair some characteristics of the plastic, such as rigidity, hardness, etc. Therefore, in order to obtain a plastic with improved toughness and less compromise of plasticity, the content of rubber in the toughened plastic composition should be controlled in a relatively low level. In contrast, in the preparation of fully vulcanized thermoplastic elastomer, the content of rubber might be relatively high, even higher than that of plastic, while a large amount of the rubber is not present as a continuous phase but a dispersed phase in the plastic matrix, so that the rubber-plastic composition has simultaneously thermoplasticity and higher elasticity.

Accordingly, it is respectfully submitted that the subject matter of amended Claim 9 and the claims depending therefrom could not have been obvious from the claims of the copending application and the provisional double patenting rejection should be withdrawn.

Claims 1-16 and 18 stand rejected under 35 USC 102(e) as allegedly being anticipated by Qiao et al. Claims 1, 5-8 and 18 stand rejected under 35 USC 102(e) as allegedly being anticipated by Angus et al. Applicants respectfully traverse these rejections insofar as each of these references has an effective date as a reference which is **after** June 15,

2000, the filing date of Applicants' Chinese priority application, China 00109220.0.

Applicants shall shortly submit a certified English translation of their priority application to perfect their claim to priority.

Claims 9, 10, 15 and 16 stand rejected under 35 USC 102(e) as allegedly being anticipated by Sahnoune et al. Applicants respectfully traverse this rejection.

Sahnoune et al., describe a thermoplastic elastomer with a cross-linked rubbery phase produced by the process of dynamic vulcanization (see, paragraph 0002 of the reference). It is known in the art that the term "dynamic vulcanization" means vulcanization carried out by the effects of cross-linking agent and intense shear stress when blending rubbers with plastics (cf. the references cited in the background portion of the description of the instant application as well as paragraph 0022 of the reference). That is to say, the rubbery phase in the thermoplastic elastomer obtained by a process of dynamic vulcanization is vulcanized in the course of, rather than prior to, melt blending the rubber and the plastic matrix.

Sahnoune et al. also describe that the partial or full crosslinking (of the rubbery phase in the thermoplastic elastomer) can be achieved by adding an appropriate rubber curative to the blend of thermoplastic olefin polymer and olefin rubber, and vulcanizing the rubber to the desired degree under vulcanizing conditions (see paragraph 0022, lines 1-6, and paragraph 0032 of the reference). Thus it can be seen that in Sahnoune et al., the thermoplastic elastomer is prepared by blending rubber curative, thermoplastic olefin polymer and olefin rubber, and vulcanizing the rubber under dynamic vulcanizing conditions, namely, the rubber used is an un-vulcanized rubber rather than a vulcanized powdery rubber. The reference neither teaches nor suggests a process for preparing a thermoplastic elastomer by

blending a fully vulcanized powdery rubber with plastic as claimed in Claim 9.

In paragraph 0021 of the reference, which is mentioned by the examiner, Sahnoune et al., describe the thermoplastic elastomer in terms of phase structure, but do not specifically describe the preparation process of the elastomer.

In paragraph 0026 of the reference, which is also mentioned by the examiner, Sahnoune et al. define that the terms thermoplastic elastomer and thermoplastic vulcanizate refer to blends of polyolefinic thermoplastic resin and vulcanized rubber. This definition only relates to the final phase structure of the elastomer but does not specifically describe the preparation process of the elastomer.

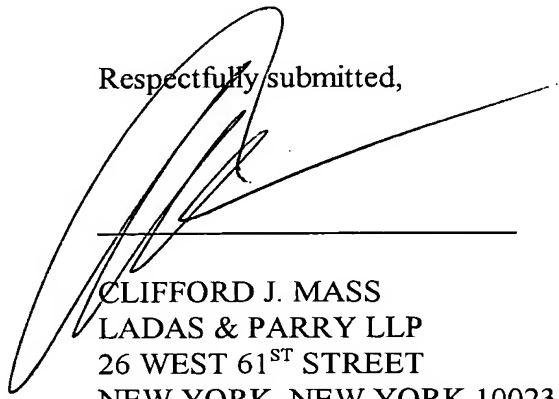
In contrast, the process as claimed in Claim 9 comprises the step of blending fully vulcanized powdery rubber with plastic. As defined in the specification, fully vulcanized powdery rubber means powder-like rubber particles that have been vulcanized before preparing thermoplastic elastomer by blending rubber with plastic matrix and have a gel content of 60% by weight or higher, rather than un-vulcanized rubber. Therefore, the process according to the claimed invention is different from a process for preparing thermoplastic elastomer by dynamic vulcanization in the prior art. The present specification describes dynamic vulcanization as background art (see page 1, line 7 from the bottom to page 3, line 8 of the description), and shows that the process for preparing fully thermoplastic elastomer according to the claimed invention addresses several drawbacks encountered by the dynamic vulcanization process known in the art (see specification page 8, line 3 from the bottom to page 9, line13).

In view of the above, it is respectfully submitted that Sahnoune et al do not

teach or suggest, and in fact teach away from, the recitation in claim 9 that requires blending **fully vulcanized powdery rubber** with plastic. Accordingly, it is respectfully submitted that this rejection should be withdrawn.

It is respectfully submitted that all rejections and objections of record have now been overcome and that the application is in allowable form. An early notice of allowance is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,



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